

R E M A R K S

Claims 1 to 9 and 11 to 21 as set forth in Appendix II of this paper are now pending in this case. Claim 1 has been amended, and Claims 15 to 21 have been added, as indicated in the Listing of Claims set forth in Appendix I of this paper.

Accordingly, applicants have amended Claim 1 to relate to a process for preparing a fiber-forming polyamide. To further bring out the particularities of applicants process, the wording of Claim 1 has been revised and the stages of

- separating the polyamide from the reaction medium, and
- extracting the separated polyamide,

have been added in accordance with applicants' disclosure on page 10, indicated lines 14 to 25, and page 12, indicated line 41, to page 13, indicated line 2, of the application. It is further respectfully submitted that the extraction stage is inherent in applicants' requirement that the prepared polyamides have fiber-forming properties as corroborated by the enclosed copy of *Ullmann's Encyclopedia of Industrial Chemistry*, Vol. A10, pp. 574-575¹⁾ in conjunction with *Ullmann's Encyclopedia of Industrial Chemistry*, Vol. A21, pp. 179-192²⁾. New Claims 15 and 18 further specify the nature of the starting monomers and the starting oligomers in accordance with applicants' disclosure on page 3, indicated line 38, to page 6, indicated line 6, of the application, new Claims 16 and 19 further specify the reaction medium, and new Claims 17, 20 and 21 specify the extractant utilized in stage (c), in each case in accordance with applicants' disclosure on page 10, indicated lines 14 to 25, and page 12, indicated line 41, to page 13, indicated line 2, of the application. No new matter has been added.

The Examiner rejected Claims 1 to 9 and 11 to 13 under 35 U.S.C. §112, ¶2, contending that the expression "carboxyl derivative groups" in the definition of R⁷ renders the Claims indefinite.

It is respectfully noted that applicants' claims do not relate to "all, or most of, or some of the ... numerous acyl derivatives" known in chemistry. Applicants' Claim 1 clearly requires that R⁷ is "amide-

1) Note, in particular, the parts of section 1.3 "Special Requirements for Polyamides" which are highlighted in yellow.

2) Note, in particular, Figure 12 on page 192.

forming". Accordingly, the groups in question are amide-forming carboxyl derivative groups. The essential inquiry pertaining to the definiteness requirement of Section 112, ¶2, is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

Carboxyl derivatives which are amide-forming are well known in the art as corroborated by the respective references in *Ilg et al.*³⁾ (of record) and *Loftquist et al.*⁴⁾ (of record), as well as *Ullmann's Encyclopedia of Industrial Chemistry*, Vol. A21, pp. 179-192⁵⁾. The referenced sections of the prior art not only corroborate that amide-forming carboxyl derivatives are well known to one possessing the ordinary level of skill in the art pertaining to the preparation of polyamides. By only mentioning exemplary representatives of such derivatives the referenced sections also corroborate that a person of ordinary skill in the pertinent art is so well acquainted with amide-forming carboxyl derivative groups that a detailed definition of such groups is generally deemed unnecessary⁶⁾. In light of the prior art it is therefore not apparent, nor has the Examiner given any reasons, why a person of ordinary skill in the polyamide art would not comprehend the metes and bounds of the expression "amide forming" "carboxyl derivative groups". As explained in *Ex parte Wu*⁷⁾

In rejecting a claim under the second paragraph of 35 U.S.C. 112, it is incumbent on the examiner to establish that one of ordinary skill in the pertinent art, when reading the claims in light of the supporting specification, would not have been able to ascer-

3) Note, in particular, col. 7, indicated lines 15 to 18, of *US 6,150,496*.

4) Note, in particular, page 3, indicated line 21, and page 8, indicated lines 1 to 3, of *WO 97/05189*.

5) Note, in particular, the parts marked in yellow on pages 187-189.

6) An application need not teach, and preferably omits, what is well known in the art (*In re Buchner*, 929 F.2d 660, 18 USPQ2d 1331 (CAFC 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986), cert. denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (CAFC 1984)).

7) 10 USPQ2d 2031 at 2033 (BPAI 1989)

tain with reasonable degree of precision and particularity the particular area set out and circumscribed by the claims.

In light of the foregoing and the attached it is therefore respectfully solicited that the rejection under Section 112, ¶2, be withdrawn.

The Examiner rejected Claims 1 to 8 and 11 to 14 under 35 U.S.C. §102(b) as being anticipated by the teaching of *Rody et al.* (US 4,234,700) citing the disclosure of *Akkapeddi et al.* (US 5,541,267) and *Degrassi et al.* (US 5,547,765) for the teaching that polyamides having a molecular weight of at least 5000 have film forming properties. The Examiner further rejected Claims 1 to 9 and 11 to 14 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Rody et al.* when taken in view of the disclosure of *Kimura et al.* (US 5,714,612).

Applicants' claims as herewith submitted relate to the preparation of fiber-forming polyamides. As previously submitted⁸⁾, the polyamides disclosed by *Rody et al.* fail to exhibit the requisite degree of polymerization which is necessary to convey fiber-forming properties to the polyamide. Applicants' claims are further distinguished from the teaching of *Rody et al.* in the requirement that the separated polyamide be extracted.

Anticipation under Section 102 can be found only if all material elements of the invention as claimed are found in one prior art source⁹⁾. The teaching of *Rody et al.* cannot be taken to anticipate applicants' process as defined in Claim 1 because *Rody et al.*'s disclosure fails to teach or suggest the preparation of polyamides which have a suitably high degree of polymerization to impart fiber-forming properties. *Rody et al.*'s disclosure also fails to teach an extraction stage in the preparation of the polyamides. Furthermore *Rody et al.*'s disclosure fails to suggest an extraction of the polyamides since the molecular weight of the polyamides obtained by the process disclosed by *Rody et al.* is too low to impart fiber-forming properties. Favorable reconsideration of the Examiner's position and withdrawal of the rejection of Claims 1 to 8 and 11 to 14 under Section 102(b) is therefore respectfully solicited.

8) Applicants' paper No. 10, page 3 et seq.

9) ie. In re Marshall 577 F.2d 301, 198 USPQ 344 (CCPA 1978); In re Kalm 378 F.2d 959, 154 USPQ 10 (CCPA 1967)

In the rejection under Section 103(a) the Examiner argued that it would have been prima facie obvious to add hindered amine stabilizers and pigments during the polymerization taught by *Rody t al.* However, modifying the process of *Rody et al.* in that manner does not result in applicants' process as defined in Claim 1 and further specified in Claims 2 to 9 and 11 to 21. The respective modification is insufficient to render the process disclosed by *Rody et al.* suitable for the preparation of fiber-forming polyamides, and -correspondingly- fails to suggest or imply the extractive purification which is essential in the preparation of any fiber-forming polyamides.

The teaching provided by *Kimura et al.*, to the extent that it pertains to polyamides, is by far too general¹⁰⁾ to add anything to the disclosure of *Rody et al.* which closes or even narrows the gap between *Rody et al.*'s process and applicants' process. More particularly, *Kimura et al.*'s disclosure provides nothing which would motivate a person of ordinary skill in the art to modify the process of *Rody et al.* in the manner which is necessary to arrive at applicants' process. The mere fact that the prior art can be modified in some manner so as to arrive at a claimed invention is insufficient to support a conclusion of obviousness within the meaning of 35 U.S.C. 103(a) where the prior art fails to suggest the desirability of the specific modification which is required¹¹⁾.

In light of the foregoing and the attached it is respectfully requested that the rejection of Claims 1 to 9 and 11 to 14 under Section 103(a) be withdrawn.

The foregoing arguments are equally applicable to the subject matter defined in new Claims 15 to 21 which depend, directly or indirectly, upon Claim 1 and incorporate the particular requirements defined therein by reference¹²⁾. Favorable action is solicited.

10) *Kimura et al.* merely mention polyamides as 1 out of 54 classes of synthetic polymers (col. 8, indicated line 39, to col. 9, indicated line 41, of *US 5,714,612*). The 54 classes of synthetic polymers enumerated by *Kimura et al.* differ significantly with regard to structure, chemistry and properties, and are obtained by distinctly different processes.

11) ie. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (CAFC 1984); see also, eg., *Interconnect. Planning Corp. v. Feil*, 774 F.2d 1132, 227 USPQ 543 (CAFC 1985)

12) If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is non-obvious (*In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (CAFC 1988)). Anticipation is the ultimate or epitome of obviousness (*In re Grose*, 592 F.2d 1161, 201 USPQ 57 (CCPA 1979)).

The Examiner rejected Claims 1 to 8 and 11 to 14 under 35 U.S.C. §102(b) as being anticipated by the teaching of *Rombusch et al.* (DE 23 33 953¹³) citing the disclosure of *Akkapeddi et al.* (US 5,541,267) and *Degrassi et al.* (US 5,547,765) for the teaching that polyamides having a molecular weight of at least 5000 have film forming properties. The Examiner further rejected Claims 1 to 9 and 11 to 14 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Rombusch et al.* when taken in view of the disclosure of *Kimura et al.* (US 5,714,612).

The disclosure of *Rombusch et al.* relates to a stabilizer composition for use in plastics which contain carboxyamide groups, the stabilizer composition being composed of¹⁴)

- a) 2,2,6,6-tetramethylpiperidine (TMP) compounds and
- b) alkali metal salts of phosphinic acid.

Rombusch et al. further teach that the stabilizing composition can be incorporated into the plastic in the usual manner, mentioning exemplarily¹⁵)

- adding the composition to the monomers before or during polymerization or polycondensation,
- kneading the composition into the polymers (*blending*) in kneaders or extruders,
- adding the composition to solutions of the plastic to obtain, after removal of the solvent, materials for surface coatings or films, and
- blending during or after the production of moldings.

In this context, *Rombusch et al.* specifically point out that the "method of incorporation depends here in the usual way on the nature of the plastics ..., its production or the way it has been processed"¹⁶). In the illustrative examples disclosed by *Rombusch et al.*,

13) Applicants herewith enclose an English language translation of DE 32 33 953. Page and line references concerning DE 32 33 953 in the following are based on the translation unless specifically indicated as pertaining to "the original" or "the German text".

14) Note, in particular, page 1, indicated line 4, to page 2, indicated line 8, and page 3, indicated lines 36 and 37, of DE 32 33 953.

15) Note, in particular, page 5, indicated lines 6 to 13, and additionally, page 5, indicated lines 15 to 19, of DE 32 33 953.

16) Note, in particular, page 5, indicated line 15 to 15, of DE 32 33 853, which corresponds to page 5, indicated lines 28 to 31, of the German text.

the stabilizer composition is drum-coated onto granules of polylauryllactam¹⁷⁾).

The test for anticipation under Section 102 is one of identity, the identical invention must be shown in as complete detail as is contained in the claim¹⁸⁾. In fact, the Federal Circuit has stated that it is error to treat claims as a catalog of separate parts, in disregard of the part-to-part relationships set forth in the claims that give those claims their meaning¹⁹⁾. The teaching of **Rombusch et al.** does not show the invention defined in applicants' Claim 1 in as complete detail as is contained in applicants' claims. At best, the specific combination of features and requirements which are specified in applicants' claims can be recreated by selecting particular parts of **Rombusch et al.**'s generic teaching and combining them, using applicants' claims as a road-map. Without the guidance of applicants' invention, however, a person of ordinary skill in the art would not reasonably incorporate a stabilizer composition of

- a) 2,2,6,6-tetramethylpiperidine (TMP) compounds and
- b) alkali metal salts of phosphinic acid.

as taught by **Rombusch et al.** to the monomers before or during polymerization when the polymerization aims at the manufacture of a fiber-forming polyamide. When **Rombusch et al.** point out that the "method of incorporation depends here in the usual way on the nature of the plastics ..., its production or the way it has been processed" it is acknowledged that the various methods are not equally suitable in any and all processes which provide plastics containing carboxyamide groups. Moreover, as addressed in the foregoing and specified in applicants' Claim 1, the manufacture of a fiber-forming polyamide entails a stage wherein the polyamide is extracted. It is immediately apparent to a person of ordinary skill that the extraction stage negates the effect of the stabilizing composition because additives which are added to the monomers before or during polymerization are likely to be removed from the polymer in the extraction stage. A person of ordinary skill in the pertinent technology would, therefore, not be motivated by the teaching of **Rombusch et al.** to introduce the stabilizer composition of TMP and the phosphinic acid

17) Page 5, indicated lines 29 to 39, of **DE 32 33 953**.

18) ie. **Richardson v. Suzuki Motor Co.**, 868 F.2d 1226, 9 USPQ2d 1913 (CAFC 1989)

19) ie. **Lindemann Maschinenfabrik v. American Hoist & Derrick Co.**, 730 F.2d 1452, 221 USPQ 481 (CAFC 1984)

salt into the polymer before or during polymerization. As explained in MPEP §2142, three basic criteria have to be met in order to establish a *prima facie* case of obviousness:

- (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings²⁰⁾,
- (2) there must be a reasonable expectation of success, and
- (3) the prior art reference or the combined references must teach or suggest all of the claim limitations.

Additionally, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and cannot be based on applicants' disclosure²¹⁾. The teaching of *Rombusch et al.* neither provides the necessary suggestion or motivation, nor the necessary reasonable expectation of success. The teaching of *Kimura et al.* is by far too general²²⁾ to provide the suggestion or motivation which is necessary to select the parts of *Rombusch et al.*'s disclosure and combine them as is required to arrive at applicants' process, or to provide the necessary reasonable expectation of success. It is therefore respectfully requested that the rejection of Claims 1 to 8 and 11 to 14 under Section 102(b) and the rejection of Claims 1 to 9 and 11 to 14 under Section 103(a) be withdrawn.

The foregoing remarks equally apply to the subject matter defined in new Claims 15 to 21 which depend, directly or indirectly, upon Claim 1 and incorporate the particular requirements defined therein by reference²³⁾. Favorable action is solicited.

The Examiner rejected Claims 1 to 8 and 11 to 14 under 35 U.S.C. §102(b) as being anticipated by the teaching of *Kaul et al.* (WO 91/03511) citing the disclosure of *Akkapeddi et al.* (US 5,541,267) and *Degrassi et al.* (US 5,547,765) for the teaching that polyamides having a molecular weight of at least 5000 have film forming properties. The

20) There are three possible sources for motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of a person of ordinary skill in the art. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-1458 (CAFC 1998)

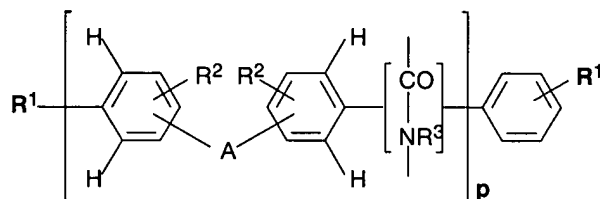
21) *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, 1442 (CAFC 1991)

22) *ibid.* footnote 10.

23) *ibid.* footnote 12.

Examiner further rejected Claims 1 to 9 and 11 to 14 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Kaul et al.* when taken in view of the disclosure of *Kimura t al.* (US 5,714,612).

The disclosure of *Kaul et al.* relates to compounds represented by formula



The degree of polymerization of those compounds, as expressed by "p" in the formula, is from 5 to 200²⁴⁾. Since a degree of polymerization of 550 is required to convey fiber-forming properties to aromatic polyamides²⁵⁾, the respective compounds of *Kaul et al.* cannot be considered as fiber-forming polyamides. The Examiner will note that the illustrations provided by *Kaul et al.* where fibers are concerned are, without exception, blends of commercially available fiber forming polyamides with a compound corresponding to the formula of *Kaul et al.*²⁶⁾. The Examiner will also note that the molecular weight of the representative examples, where indicated, is by a factor of almost 10 below the molecular weight at which fiber formation can be expected²⁷⁾.

The teaching of *Kaul et al.* cannot be considered as anticipating applicants' invention because *Kaul et al.* fail to provide for all of the material elements of applicants' process which are defined in the claims. The teaching of *Kaul et al.* fails to teach or suggest the preparation of polyamides which have a suitably high degree of polymerization to impart fiber-forming properties. The teaching of *Kaul et al.* fails to teach or suggest an extraction stage in the preparation of the polyamides. Moreover, the teaching of *Kaul et al.* fails to suggest an extraction of the polyamides since the molecular weight

24) Note, in particular, page 2, lines 8 and 9, of WO 91/03511.

25) *Ullmann's Encyclopedia of Industrial Chemistry*, Vol. A10, page 455, copy submitted earlier.

26) Exemplary fiber formation in:

Example 37, page 14 of WO 91/03511: blend with nylon 6;

Examples 46 to 49, pages 16 and 17 of WO 91/03511: blend with "nomex"; and

Example 52, page 18 of WO 91/03511: blend with "kevlar".

27) Exemplary molecular weight in:

Example 38, page 15 of WO 91/03511: 6,400;

Examples 40 to 45, pages 15 and 16 of WO 91/03511: similar to Example 38.

Molecular weight for fiber formation 60,000 (see ftn. 25).

of the polyamides obtained by the process disclosed by *Kaul t al.* is too low to impart fiber-forming properties. Favorable reconsideration of the Examiner's position and withdrawal of the rejection of Claims 1 to 8 and 11 to 14 under Section 102(b) is therefore respectfully solicited.

In support of the rejection under Section 103(a) the Examiner argued that it would have been prima facie obvious to add hindered amine stabilizers and pigments during the polymerization taught by *Kaul et al.* However, a modification of the process taught by *Kaul et al.* in the manner outlined by the Examiner does not result in applicants' process as defined in Claim 1 and further specified in Claims 2 to 9 and 11 to 21. On the one hand, the respective modification is insufficient to render the process disclosed by *Kaul et al.* suitable for the preparation of fiber-forming polyamides. On the other hand, the combination fails to suggest or imply the extractive purification which is essential in the preparation of fiber-forming polyamides.

As pointed out earlier²⁸⁾, the teaching provided by *Kimura et al.* is by far too general. The teaching of *Kimura et al.* therefore fails to add anything which is suitable to close or even narrow the gap between *Kaul et al.*'s process and applicants' process. More particularly, *Kimura et al.*'s disclosure provides nothing which would motivate a person of ordinary skill in the art to modify the process of *Kaul et al.* in the manner which is necessary to arrive at applicants' process. The mere fact that the prior art can be modified in some manner so as to arrive at a claimed invention is insufficient to support a conclusion of obviousness within the meaning of 35 U.S.C. 103(a) where the prior art fails to suggests the desirability of the specific modification which is required²⁹⁾.

In light of the foregoing and the attached it is respectfully requested that the rejection of Claims 1 to 9 and 11 to 14 under Section 103(a) be withdrawn.

The foregoing arguments are equally applicable to the subject matter defined in new Claims 15 to 21 which depend, directly or indirectly, upon Claim 1 and incorporate the particular requirements defined therein by reference³⁰⁾. Favorable action is solicited.

28) See ftn. 10, page 5 of this paper.

29) See ftn. 11, page 5 of this paper.

30) See ftn. 12, page 5 of this paper.

In light of the foregoing and the attached, the subject matter defined in Claims 1 to 9 and 11 to 21 is deemed to fully meet the provisions of Sections 102, 103(a) and 112, ¶2, of the Patent Act. Favorable action is solicited.

In the event that the Examiner is of the opinion that further explanations or clarifications are necessary or desirable in this matter, applicants would greatly appreciate it if the Examiner would grant their representative the opportunity address such matters in a personal interview to facilitate the proceedings.

REQUEST FOR EXTENSION OF TIME:

It is respectfully requested that a two month extension of time be granted in this case. A check for the \$420.00 fee is attached.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 11.0345. Please credit any excess fees to such deposit account.

Respectfully submitted,

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Encl.: THE LISTING OF CLAIMS (Appendix I)

THE AMENDED CLAIMS (Appendix II)

Ullmann's Encyclopedia of Industrial Chemistry, Vol. A10, pp. 574-575

Ullmann's Encyclopedia of Industrial Chemistry, Vol. A21, pp. 179-192

English language translation of **DE 32 33 953 (Rombusch et al.)**

HBK/BAS